

CLAIMS

1. A method of producing a carbon nanotube, comprising:
preparing a carbon nanotube by introducing a catalyst
substance into a carbon structure;
making the catalyst substance move in the carbon
5 structure; and
crystallizing the trail region.
2. The method of producing a carbon nanotube according
to Claim 1,
wherein said crystallizing said carbon structure is
performed after said carbon structure is fixed on a
5 predetermined position of said substrate.
3. The method of producing a carbon nanotube according
to claim 1 or 2,
wherein said carbon structure is heated when said
catalyst substance is moved in said carbon structure.
4. The method of producing a carbon nanotube according
to claim 3,
wherein at least a part of said catalyst substance is
liquefied by heating said carbon structure.
5. The method of producing a carbon nanotube according
to any one of claims 1 to 4,

wherein said carbon structure is formed by a vapor-phase deposition method of using a charged particle beam as
5 excitation source.

6. The method of producing a carbon nanotube according to any one of claims 1 to 4,

wherein said carbon structure is prepared by a vapor-phase deposition method of using an aromatic hydrocarbon
5 compound as precursor material.

7. The method of producing a carbon nanotube according to any one of claims 1 to 6,

wherein said carbon structure is a resist pattern.

8. The method of producing a carbon nanotube according to any one of claims 1 to 7,

wherein said carbon structure is a linear structure and said catalyst substance is moved along said carbon
5 structure.

9. The method of producing a carbon nanotube according to of claim 8,

wherein said catalyst substance is a catalyst particle and the diameter of said catalyst particle is 0.5
5 to 3 times as large as the diameter of said linear structure.

10. A method of producing a carbon nanotube, comprising:
preparing a substrate;

forming a carbon structure at a position separated
from the surface of the substrate;

5 preparing a carbon nanotube by making the catalyst
substance move in the carbon structure; and
crystallizing the trail region.

11. The method of producing a carbon nanotube according
to claim 10,

wherein said carbon structure is heated when said
catalyst substance is moved in the carbon structure.

12. The method of producing a carbon nanotube according
to claim 11,

wherein at least part of said catalyst substance is
liquefied by heating said carbon structure.

13. The method of producing a carbon nanotube according
to any one of claims 10 to 12,

wherein said carbon structure is formed by a vapor-
phase deposition method of using a charged particle beam as
5 excitation source.

14. The method of producing a carbon nanotube according
to any one of claims 10 to 12,

wherein said carbon structure is prepared by a vapor-

phase deposition method of using an aromatic hydrocarbon
5 compound as precursor material.

15. The method of producing a carbon nanotube according
to any one of claims 10 to 14,

wherein said carbon structure is a resist pattern.

16. A method of producing a transistor, comprising
forming a source electrode and a drain electrode on both
ends of the carbon nanotube structure, respectively, and
additionally a gate electrode after forming a carbon
5 nanotube structure by the method according to any one of
claims 1 to 15.

17. A method of producing a wiring structure of carbon
nanotube, comprising forming a carbon nanotube structure by
the method according to any one of claims 1 to 15.

18. A nanotube structure, comprising a substrate and a
carbon nanotube placed above said substrate,
wherein the entire of said carbon nanotube is separated
from said substrate.

19. A carbon nanotube structure, comprising:
a substrate;
a first carbon dot and a second carbon dot formed on said
substrate; and

- 5 a carbon nanotube connecting the gap between said first and second carbon dots.

20. The carbon nanotube structure according to claim 19, wherein said first or second carbon dot contains an aromatic hydrocarbon.

21. The carbon nanotube structure according to claim 19 or 20, wherein said carbon nanotube is formed so that it is separated from said substrate.

22. A transistor, comprising the carbon nanotube structure according to any one of claims 18 to 21.

23. A wiring structure, comprising the carbon nanotube structure according to any one of claims 18 to 21.